Interagency Committee on the Health Effects of Non-Ionising Fields

Notes from the Zoom Meeting held on 13 August 2020

Present

Peter Berry (Electricity Engineer's Assoc.), Veerendra Bhim (Energy Safety Group, WorkSafe NZ), Ben Blakemore (Telecommunication Carriers Forum), Simon Cooke-Willis (Telecommunication Carriers Forum), Martin Gledhill (Ministry of Health – Acting Secretary), John Dockerty (University of Otago), Kimbal McHugo (Ministry of Education), Adam Tommy (Kordia), Matthew Walker (Transpower New Zealand Ltd), Rose Feary (Ministry for the Environment), Andrea t'Mannetje (Massey University), Theresa van Rooyen (Radio Spectrum Management), Ken Karapidis (ARPANSA), Rick Tinker (ARPANSA), Sally Gilbert (Ministry of Health).

Apologies

Richard Jaine (Ministry of Health – Chair), Marie Gibson (DHB Public Health Units), John Duffy (Consumer NZ), Dave McLean (Massey University), Isobel Stout (local government)

Welcome

Due to the absence of Richard Jaine, Sally Gilbert took the chair, welcomed everyone to the meeting and led a round of introductions.

Finalise the agenda

The agenda was confirmed.

Minutes of the previous meeting

The minutes of the meeting held on 13 February 2020 were confirmed as an accurate record of the meeting with two corrections:

- In the report from the Ministry for the Environment, the third sentence "The Transmission NES is waiting in the wings." was deleted.
- In the report from the Ministry of Education, the second sentence "Coverage will be extended beyond schools to the local community – some schemes are already operating." was deleted.

Matters arising

All action points have been attended to. The committee noted the email from the Massy Centre for Public Health Research to the Prime Minister's Chief Science Adviser.

New Zealand Information on ELF and RF

Industry Update on Engineering and Technical Developments

Ben Blakemore spoke to his report and highlighted the major shifts in traffic patterns that had resulted from the lockdown. These shifts are continuing. He also highlighted the public concern, and conspiracy theories, arising from 5G deployment, and the fact that all three operators had had arson attacks on sites. He considered that information provided by government agencies is good but should be distributed proactively rather than sitting on a website where it might not be found.

Matthew Walker noted that reconductoring work is planned for some lines in the south of the South Island. Some lines in the Auckland and Waikato areas will be removed in the coming years.

CIGRE (International Council on Large Electric Systems) has published a book "Responsible management of electric and magnetic fields (EMF)". CIGRE is a largely technical organisation and this publication gives a more open and comprehensive coverage of the EMF and health issues than it has done previously. A summary of the content, is available at

https://electra.cigre.org/311-august-2020/technical-brochures/responsible-management-of-electric-and-magnetic-fields-emf.html. It can also be purchased at that address.

Peter Berry mentioned that Powerco, a lines company, is working with a company called Emrod on wireless power transmission. The system operates at frequencies around 2.5-5 GHz, and is intended to transfer power in the range 10-100 kW over distances of a few hundred metres where conventional transmission approaches might be difficult. The project is being partly funded by Callaghan Innovation, and a prototype is anticipated in October. The microwave beam is surrounded by low power laser beams, and if any of these is interrupted it shuts off the power. There were questions about licensing for this kind of system, and Theresa van Rooyen commented that while the frequencies might be in bands reserved for General User Radio Licences and ISM (Industrial, Scientific and Medical) purposes there were still constraints on use.

Ministry for the Environment
Rose Feary provided an overview of a complaint about the National Environmental Standards for Telecommunications Facilities (NESTF) made to the Regulations Review Committee (RRC) by the Outdoors Party. The complaint largely centred around the use of NZS 2772.1:1999, and alleged that it undermined the purpose of the Resource Management Act. The complainant also alleged that the NESTF restricted the right of local communities to be heard. There were criticisms of the role and competence of the Interagency Committee, too.

MfE, MBIE and Health submitted evidence to the RRC, and the complainant and government agencies attended a hearing in June. There was a large number of supporters of the Outdoors Party at the hearing. The complaint was not upheld. The RRC concluded that the complaint centred around a technical matter, and the RRC had to rely on experts. In this respect they were satisfied with the responses provided by government agencies.

Ministry of Education
Kimbal McHugo said that the programme to replace wireless hardware in schools has been delayed, but will take place over the next five years. Fibre optic connections to schools are being used to set up community hubs, and a grant from the Provincial Growth Fund is helping fund this.

During the lockdown two schools agreed to have COWs (Cellular on Wheels transportable cellsites) installed temporarily at school sites to supplement mobile broadband in areas where this was running close to capacity.

Energy Safety Service/Worksafe
There have been no queries received.

Ministry of Health
The correspondence on 5G (Ministerials and OIAs) has decreased a little in recent months. A review of studies on EMFs and symptoms that was partly funded by the Ministry of Health has been published and covered in a recent news report (https://www.stuff.co.nz/national/health/122327807/cell-phone-making-you-sick-its-all-in-your-head). The review concludes that “There is insufficient scientific evidence to support the idea that exposures to radiofrequency fields cause a specific syndrome of ill health, characterised by psychological and physical symptoms. The symptoms reported are generally common, and generally similar to those reported with other perceived environmental hazards.”

The paper on the proposed update to the Report to Ministers was tabled, and Committee members invited to send suggestions for content, and for material that could be removed, to Sally and Martin.

MobiKids Study
There is no new information on the MobiKids study.

Update on Standards
Martin Gledhill summarised the material on the new ICNIRP RF Guidelines circulated before the meeting. Ken Karapidis said that ARPANSA had prepared a revision of the ARPANSA RPS-3 Standard (to be called RPS S-1) and had received approval to send the draft out for consultation. The draft is based on the ICNIRP 2020 recommendations, with a few modifications, and Martin Gledhill had been involved in its preparation.

The discussion covered two main areas: whether the new ICNIRP Guidelines would be a suitable replacement for the limits in NZS 2772.1:1999 and, if so, how they might be incorporated in a new exposure standard.

Regarding the status of the 2020 Guidelines, the following points came up and received general agreement:

- ICNIRP 2020 limits are better able to cover exposures from new technology.
- ICNIRP is a pre-eminent organisation in this field, and their new Guidelines are valid.
- There is no real alternative.
- Government agencies have no objection.

Concerning a replacement standard, discussion included the following points:

- The Ministry of Health could look at recommending RPS S-1.
- To replace NZS 2772.1 under the Resource Management Act, any new standard would need to be cited in the NESTF and district plans.
- RPS S-1 has some Australia-specific references that would need to be replaced by New Zealand equivalents, and the consistency of recommendations on occupational exposures with New Zealand occupational health and safety legislation would need to be checked.
- If a new standard is recommended and cited in legislation, NZS 2772.1 should be officially withdrawn.

It was noted that NZS 2772.1 has some particular features, such as the requirement in clause 10(d) to minimise unnecessary exposures provided this does not compromise coverage objectives. Ken Karapidis noted that there is no equivalent clause in RPS S-1, but it refers instead to the recent ICNIRP statement on “Principles for non-ionizing radiation protection” (available at https://www.icnirp.org/cms/upload/publications/ICNIRPprinciples2020.pdf). RPS-3 has an exposure minimisation requirement, but experience in Australia is that this has not been picked up by regulators. Committee members commented that in New Zealand that clause is helpful when communicating with residents, that operators follow the requirement as they could be open to challenges on whether they had applied it or not, and that it is an important principal that forms part of the site planning process.

Australian Information on ELF and RF
Rick Tinker described the enhanced EME programme at ARPANSA, which will receive A$9M over four years. Projects envisaged include:

- Improving ARPANSA’s measurement and calibration facilities.
- Building stronger collaborations with universities in Australia and overseas through research.
- Measurement campaigns to quantify RF exposures in the community.
- Enhanced international participation with organisations like the WHO and ICNIRP.

Plans for the measurement programme include:

- Setting up monitoring sites to look at RF in the environment, for example near small cells.
- Repeat the WiFi in schools survey.
- Survey RF in homes.

- Revisit locations in Melbourne where exposures were measured in a previous survey to see how these have changed over time.

The focus is on exposures in the community, but some occupational measurements will also be done in industries where high exposures are expected. This programme will be independent of any monitoring by network operators.

Rick also highlighted the small cell survey carried out by ACMA, ARPANSA statements on 5G and Covid-19 and the Parliamentary Inquiry on the 5G rollout.

International Information on ELF and RF

International Reports (ELF)

Before running through the abstracts he had circulated, John Dockerty talked about how he selects which papers to present. A simple search produced about 300 abstracts from the past 6 months, and he concentrates on epidemiological studies and those investigating interaction mechanisms. Study outcomes are not a factor in the choice of papers, but they must be relevant to the health question and of reasonable quality. His approach is based on recognised guidelines for carrying out systematic reviews.

- Auger – Hazard ratios are not statistically significant, and he considers that the results do not demonstrate any risks.
- Carlberg – Occupational exposures to ELF fields are not associated with an increased risk of acoustic neuroma.
- Carles – This is difficult to interpret. Although the study found associations between brain tumours and living near power lines, participation was low and there is no indication of how may of the eligible controls participated.
- Filippini – There was only an 18.9% response rate to the questionnaire, so the findings are difficult to interpret.
- Li – While the study claims to find an association between ELF field exposure during pregnancy and risk of ADHD, Martin commented that the author has published several apparently positive findings using the same data set, but the exposure measure changes from one study to another, suggesting that there could be a degree of over-interpretation.
- Migault – There is no obvious dose-response relationship, so the associations found cannot definitively be explained as an effect of ELF field exposure.
- Toledano – The findings do not support the corona ion hypothesis proposed by Henshaw and colleagues about 20 years ago.
- Amoon – Dwelling type does not appear to play a significant role in the relationship between ELF fields and childhood leukemia.

John also drew attention to the ICNIRP publication on gaps in knowledge relevant to ELF field exposure guidelines.

International Reports (RF)

Martin Gledhill also started by providing an overview of how he selects material to be presented in the abstracts. Reviews carried out by national and international health and scientific bodies are of primary importance, because they have done a lot of background work in sifting through the research and assessing it for quality and relevance. Factors that favour inclusion of a study in the selected abstracts include whether it has been peer reviewed, the quality of the dosimetry and scientific practice, whether the end point is related to human health and the magnitude of the exposure in relation to environmental levels and limits.

- US FDA review of cancer-related studies – looks to be very thorough, and concludes that there is insufficient evidence to support a causal relationship between RF exposures and development of cancer.
- Swedish Scientific Council on EMFs – has reviewed the past year's research and found no new established causal relationships between EMF exposure and health risks. Notes several areas where more research is needed, and lists studies that were considered to be of too poor quality to be informative.

- Hardell – Considers that RF should be considered a Class 1 carcinogen, but makes some unfounded statements about ICNIRP and SCENIHR. IARC will review RF in the next five years.
- Liu, Huang – Both consider that mobile phone use should be limited to minimise effects on sleep.
- Tettamanti – COSMOS study data suggests that RF from mobile phones does not have long term effects on sleep quality.
- Styliani - Duration of mobile phone use did not affect heart rate variability or sympathovagal balance.
- Danker-Hopfe – WiFi exposure correlated with a change in alpha EEG power in some parts of sleep, but there were no effects on subjective assessment of sleep quality or other parameters monitored.
- Bushberg – Concise summary of whether 5G exposures might affect health, and concludes that it does not.
- Boileau – Found that mothers that used mobile phones a lot during pregnancy were more likely to have a low AUDIPOG score, but this appears to be an exploratory study.
- Dieudonne – Reviews three possible hypotheses to explain EHS (EMF fields, nocebo effect, attributive effect), and finds that none is particularly satisfactory.
- Liu – Concludes that fast SAR systems for assessing exposures from cellphones could provide more accurate estimates than existing systems.
- Cabre-Riera – Found that cumulative RF dose to brain over the day is not correlated with brain volumes in preadolescents. Relevance of brain dose as a measure of exposure is not clear.
- Yong – RF from mobile phones did not cause DNA damage, but there was increased production of ROS.
- Habauzit – Long term exposure to 94 GHz RF did not modify gene expression in rat skin.
- Halgamuge – Reviewed large number of studies on effects of weak exposures, but did not appear to consider study quality in the analysis.
- Schuermann – Tried to reproduce previous studies of DNA damage caused by RF, but could not do so. Investigated several possible reasons for the difference in findings.
- Mai – Non-thermal exposures of mice resulted in increased body temperature, suggesting some other physiological mechanism at work.
- De Seze – Rats exposed to high intensity, extremely short RF pulses had shorter survival and subcutaneous tumours, but there were no effects on behaviour. “Residual” X-ray exposures of 0.8 Gy were thought not to have affected the results (which seems unusual).
- Parker – Thermal effects on the eye at 35 and 94 GHz require intensities well above exposure limits.
- Choi – 1.7 GHz RF at SAR of 1 and 2 W/kg did not damage DNA but slowed proliferation and accelerated aging. This could be due to increased ROS.
- Szilagyi – RF exposures did not enhance to effects of UV in producing inflammation in skin.
- Misek – RF exposures of rabbits slightly above occupational limits suggested an effect on heart rate.
- Kuhne – Review of the NTP study data suggested that the effects on heart schwannomas observed in exposed rats could be of thermal origin.
- Bouisset – Exposure to strong ELF fields had no effect on posture control.
- Sato – Ecological study found a non-significant association between market penetration of induction cooktops and adverse birth outcomes.
- Amoon – Distance to high voltage lines is strongly correlated with calculated magnetic fields.
- Aris – ELF fields near wind turbines are low.
- Zhang – Exposure to 500 μT ELF fields for 24 weeks caused no effects on cardiovascular system.
- Barnes – Suggest that inconsistent results in EMF experiments are due to biological systems maintaining homeostasis in response to exposures and that timing could affect results of experiments. Speculate on a new approach to setting exposure limits.

Martin Gledhill spoke to his report on the WHO EMF Project teleconferences. The main items of interest are the plans for progressing the review of RF research. Timing is not yet fixed but the systematic reviews are expected to be completed by mid-2021, and the final monograph in 2022. Ken Karipidis noted that protocols for the systematic reviews will be published in Environment International.

Other business
There were no items of other business.

Conclusions
The Committee noted the reports received and advised that there was nothing in the research considered at the meeting that would lead the Committee to consider that any change in current policy was required.

Next meeting
The next Committee meeting is proposed for 10 February 2021. As part of the Ministry's approach to sustainability, participation over Zoom will be offered. Participants thought that the Zoom meeting this time had gone well, and the ARPANSA participants were pleased to have been able to take part. For future meetings a break could be scheduled part way through.

Martin Gledhill
Acting Secretary

18 August 2020